Prepared for

Gowanus Canal Remedial Design Group

STATEMENT OF WORK

CONSTRUCTION AND CONSTRUCTION OVERSIGHT PLAN

4TH STREET TURNING BASIN DREDGING AND CAPPING PILOT STUDY

GOWANUS CANAL SUPERFUND SITE BROOKLYN, NEW YORK

Prepared by

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STATEMENT OF WORK

1. INTRODUCTION

Geosyntec Consultants and its affiliated New York engineering company, Beech and Bonaparte P.C., (Geosyntec), has been contracted by the Gowanus Canal Remedial Design Group (RD Group) for the proposed Remedial Design of the Gowanus Canal (the Canal) Superfund Site under the Unilateral Administrative Order (UAO) for Remedial Design effective March 24, 2014 (Geosyntec, 2015; United States Environmental Protection Agency [EPA], 2014). The remediation is being conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Docket No. 02-2014-2001.

1.1 Pilot Study Purpose and Objectives

A comprehensive Pilot Study of the Gowanus Canal remedy will be conducted in the 4th Street Turning Basin. The first phase of the Pilot Study, which was completed in 2016, evaluated the removal of large debris prior to dredging and the removal of smaller debris and debris fields using mechanical dredging. The first phase of the Pilot Study also included preparation of the Staging Site for management of debris from debris removal activities. This document covers the second phase of the Pilot Study, which will encompass additional Staging Site preparation, bulkhead support construction, dredging, ex situ dredge material management, dredge water treatment, capping, and associated environmental monitoring and controls. It is expected that the Pilot Study will yield valuable information to support many components of the Remedial Design and future remedial actions.

This Statement of Work outlines the portions of the Pilot Study to be conducted by the Contractor in accordance with the attached Contract Documents.

The following are key objectives of the 4th Street Turning Basin Dredging and Capping Pilot Study:

1. Confirm the selection of appropriate dredging equipment and establish the ability to perform within unique site constraints;

2. Determine practical dredging production rates for full-scale implementation;

3. Confirm the selection of appropriate control measures, including air and turbidity curtains, for sediment resuspended during dredging operations;

4. Evaluate the ability to dredge around and beneath bridges;

5. Evaluate planned approach for a cantilevered bulkhead support system and if applicable, determine the practical production rate for full-scale bulkhead installation;

6. Evaluate the processes for managing dredged material, including:

    a. Initial dredged material processing, including separating debris greater than 6 inches from dredged sediment;

    b. Dewatering of dredged sediment and estimations of decant water volumes;

    c. Effectiveness of in-barge mixing for sediment solidification/stabilization (S/S);

    d. Dredged material transport; and

    e. Ability of off-Site facilities to receive, process, and beneficially use dredged material.

7. Evaluate the performance of the dredge water treatment system and ability to meet discharge limits;

8. Identify constraints for material handling, sequencing of barges, and transportation of dredged materials;

9. Evaluate cap design, including the logistics of material handling and methods of cap installation; and

10. Evaluate potential environmental impacts during dredging, in-barge mixing, and capping.

The Contractor shall be prepared to execute the design explained herein for bulkhead support, dredging, capping and associated other activities. In general, the Contractor is required to implement the work as described here and as presented on the Construction Drawings and in the Technical Specifications. Due to the exploratory nature of Pilot Study operations, there may be an interest in evaluating alternate methods. The Owner's Representative will discuss potential alternate methods with the Contractor and provide recommendations to the Owner (a definition of roles is provided in Subsection 3.1 of this document). Any changes required to implement alternate methods will require Owner review and approval as described in the Contract Documents, including any necessary authorizations by regulatory agencies.

1.2 Project Description

The 4th Street Turning Basin is located south of the intersection of 3rd Street and 3rd Avenue. Dredging and Capping Pilot Study activities will occur in the 4th Street Turning Basin and excavation activities will occur beneath the 3rd Avenue Bridge. A Staging Site is located at 459 Smith Street (Block 471, Lot 200), Brooklyn, New York 11231. The locations of the 4th Street Turning Basin, 3rd Avenue Bridge and the Staging Site are provided in the Construction Drawings.

The Contractor shall execute the following Pilot Study scope elements:

- Prepare Staging Site and install facilities to support dredging and capping operations;
- Obtain local permits and prepare pre-construction submittals;
- Close a portion of Huntington Street;
- Install sediment and floatables containment at the mouth of the 4th Street Turning Basin;
- Dredge an access channel into the 4th Street Turning Basin to facilitate bulkhead support installation;
- Install bulkhead supports along the existing bulkheads of a portion of the 4th Street Turning Basin;
- Install a sheet pile wall across the 4th Street Turning Basin near the 3rd Avenue Bridge;
- Conduct dredging in three phases:
- Phase I: Dredging of Soft Sediment;
- Phase II: Dredging of Targeted Native Alluvial Removal Areas (TNARA) with slotted excavation and backfill;
- Phase III: Dredging of Sediments Beneath the 3rd Avenue Bridge;
- Manage and transport dredged material and dredge water;
- Backfill areas dredged beneath the 3rd Avenue Bridge;
- Backfill of Selected Dredge Areas in the 4th Street Turning Basin;
- Place capping layers in sequence on dredged sections of the 4th Street Turning Basin;
- Perform all required surveys;
- Coordinate work with monitoring activities performed by EPA and the Owner, including but not limited to: (i) structural evaluations of buildings and structures near bulkheads and the Canal; (ii) survey monitoring of existing bulkheads; (iii) survey monitoring of the bulkhead supports; and (iv) environmental and archaeological monitoring;
- Implement noise, odor, and water quality control measures as required to meet environmental monitoring action levels; and
- Properly treat and dispose of all waste materials generated during the Work.

2. CONTRACTOR SCOPE OF WORK

The scope of work for the Contractor includes all labor, supervision, materials, and equipment necessary to complete the work described above in Section 1.2. All work shall be performed in accordance with the requirements outlined in the Technical Specifications and Construction Drawings. Calculation packages and other supporting reports and documents referenced in the Technical Specifications are available to the Contractor upon request, unless specified otherwise. A description of the work to be conducted by the Contractor is included in this section.

2.1 Project Work Activities

2.1.1 Task 1 – Mobilization and Staging Site Preparation

The Staging Site will be used for activities including staging of trailers and administrative facilities, staging of equipment, material storage, dredge water treatment debris washing and sorting on the existing asphalt pad, and temporary stockpiling and offloading of Processed Dredged Material (PDM) if desired by the Contractor. The Contractor will prepare and submit plans for preparing the Staging Site in accordance with the Construction Drawings and Specifications including, but not limited to, performing the following actions:

1. Construction and layout surveying;
2. Installation of sediment and erosion controls and temporary construction fencing;
3. If necessary or desired, flush-mounting existing stickup wells within the footprint of the available work area (note wells in the footprint of the asphalt pad are already flush-mounted);
4. Removal of existing stockpiles of debris and demolition waste;
5. Staging trailers for project personnel;
6. Installation of dredge water treatment system;
7. Preparation of access roads;
8. Preparation of material and equipment storage and laydown areas;
9. Accessing marine facilities for on-water work; and
10. Closing a portion of Huntington Street for use as a temporary staging area.

2.1.2 Task 2 – Surveys

The Contractor shall perform upland and marine surveys to document conditions before, during and after construction. The initial and final/as-built surveys shall be conducted to document facilities constructed on the Staging Site, including any wells modified as part of the work, in accordance with Sections 31 10 00 and 01 71 23. The Owner's Representative will have a before dredging survey performed by an independent third-party hydrographic surveyor. The Contractor shall perform weekly hydrographic surveys to maintain a record of the work and to support request for progress payments. In addition, the Contractor shall perform hydrographic surveys to verify the completion of each phase of dredging. For each phase of dredging, besides Phase II, following notification from the Contractor, the Owner's Representative will have a hydrographic survey performed by an independent third-party hydrographic surveyor for quality assurance and for measurement for payment. The Contractor survey will be used for verification and measurement for payment during Phase II, due to slotted excavation dredging technique. Marine surveys shall be conducted in the 4th Street Turning Basin in accordance with Sections 35 20 23.13 and 01 71 23.

2.1.3 Task 3 – Sediment and Floatables Management

Sediment and floatables containment shall be used for the duration of sheet pile installation (Section 31 41 16) and of dredging operations (Section 35 20 23.13). The turbidity curtain may be used during capping operations to prevent re-contamination of the cap in the event of a storm (Section 35 43 00).

The Contractor shall control floating debris, turbidity, and sheens in accordance with Section 02 60 16. Both air and turbidity curtains will be required for managing resuspended sediment and floatable material at different times during construction, as described herein. The air and turbidity curtains shall be installed prior to beginning dredging or sheetpile installation.

During working hours defined in the specifications, the air curtain must be operational and follow the performance specifications in Section 02 60 16. After working hours (nights and weekends), the turbidity curtain will be used to control resuspended sediment, sheen or other floatables instead of the air curtain.

If threshold turbidity criteria are exceeded (as defined in Section 01 57 19) during Work in the Canal, the Contractor shall implement water quality controls in accordance with Sections 01 57 19 and 02 60 16, including but not limited to, slowing or halting operations, modifying operational procedures, and modifying turbidity control measures.

When turbidity or air curtains are deployed, the Contractor shall collect and remove floating debris and visual surface sheen resulting from project activities in accordance with Sections 02 60 16 and 02 51 19. Any adsorbent materials shall remain in place until appropriate to remove as specified

in Section 02 60 16. The Contractor shall dispose of spent materials in accordance with Section 02 51 19.

2.1.4 Task 4 – Access Channel Dredging

An access channel will be dredged into the 4th Street Turning Basin as shown on the Construction Drawings to allow the Contractor to install bulkhead supports and to allow barge access for subsequent production dredging.

The channel will be dredged to a depth of -8.57 ft NAVD88[1] across the 40 ft wide channel, centered within the Canal as shown in the Construction Drawings. This dredge depth will allow for six feet of draft at Mean Low Water (MLW). A short section of the 4th Street Turning Basin, between the main Canal and the start of access channel dredging, will remain undisturbed to reduce the potential for recontamination of the Turning Basin from Canal sediment deposition after the Pilot Study is finalized.

Access dredging will be performed with an environmental bucket unless site conditions necessitate the use of a conventional clamshell bucket according to Section 35 20 23.13. The Owner's Representative shall be provided with the basis, including field demonstration, for recommending use of a conventional clamshell bucket.

2.1.5 Task 5 – Bulkhead Support

As part of this Scope of Work, various bulkhead support and/or replacement structures will be installed around the 4th Street Turning Basin to facilitate the dredging and capping components of the work.

The approach for bulkhead support as a part of the Pilot Study Scope of Work is outlined below.

1. The Contractor shall perform Building Condition Assessments of existing structures within 200 ft of the sheet pile driving for bulkhead support along the 4th Street Turning Basin, according to Section 02 22 00. Baseline Building Condition Assessments shall be performed prior to the commencement of the Work to establish the existing conditions. Interim Building Condition Assessments and Post-Construction Building Condition Assessments shall be performed to monitor for potential damage caused by construction-related activities.

2. The Contractor shall perform both a pre-work and post-work photographic survey from within the Canal at low tide of: (i) bulkheads surrounding the 4th Street Turning Basin, (ii)

[1] All depths and elevations listed in this Section are in NAVD88.

bulkheads and bridge supports surrounding the work area beneath the 3rd Avenue Bridge, and (iii) bulkheads along the Staging Site.

3. The Contractor shall install optical survey markers along the top edge of the existing bulkheads along 4th Street Turning Basin and the 3rd Avenue Bridge to monitor for movements in accordance with Section 31 41 16. A baseline survey of these survey markers shall be performed prior to the commencement of the Work. After the baseline survey is completed, daily surveys of the markers shall be performed and the measured incremental and cumulative movements shall be recorded. This monitoring shall be performed throughout bulkhead support installation, dredging, and capping activities.

4. The Contractor shall install test pits at locations shown on the Construction Drawings to confirm depth of the intact existing bulkheads is at EL -6.

5. The Contractor shall install bulkhead support in accordance with Section 31 41 16 and the Construction Drawings.

6. The Contractor shall retain the services of a vibration monitoring specialist and perform vibration monitoring during sheet pile installation and bulkhead support construction in accordance with Section 31 41 16. If excess vibrations are observed, the Contractor shall change construction operations to reduce vibrations to acceptable limits in accordance with Section 31 41 16.

The Contractor shall report all survey results to the Owner's Representative. If excessive movements are observed (as defined in Section 31 41 16), the Owner's Representative will be notified and alterations may be made to dredging operations or the bulkhead support systems to arrest and limit the potential for continued movements. In the case that excess movements of an existing bulkhead are observed, contingent bulkhead support measures may be implemented. Such measures may include install a deadman sheet pile and tie rod systems or prestressed tieback anchor system. The Contractor shall install contingent support in accordance with Section 31 41 16 and Section 31 51 13.

2.1.6 Task 6 – Production Dredging

General

After bulkheads and bulkhead supports are installed, the Contractor shall dredge sediment in three Phases, as shown in the Construction Drawings, and in accordance with Section 35 20 23.13:

1. Phase I: Dredging of Soft Sediment;

2. Phase II: Dredging of Targeted Native Alluvial Removal Areas (TNARA); and

3. Phase III: Dredging of Sediments Beneath the 3rd Avenue Bridge.

During Phase I, dredging will remove sediment to an elevation that removes soft sediment and a limited amount of native alluvial sediment. After Phase I dredging is complete, an after dredge (AD) survey will be completed by the Contractor to verify target depths are reached. Once the Contractor certifies Phase I dredging is complete, a hydrographic survey will be conducted by an independent third-party surveyor to measure quantities for payment.

After completion of Phase I dredging is verified and surveys are complete, the Contractor shall proceed with Phase II dredging, also referred to as Targeted Native Alluvial Removal Areas (TNARA) dredging. In Phase II, dredging will remove sediment from targeted areas of native alluvial sediment. These targeted areas were selected because of elevated TarGOST® readings observed during pre-design investigations; TarGOST® readings are correlated with Non-Aqueous Phase Liquid (NAPL) concentrations. As presented on the Construction Drawings, some areas of Phase II dredging require dredging by the slotted excavation method. The sequence for removing sediment and backfilling by the slotted excavation method is shown in the Construction Drawings.

Due to the nature of the slotted excavation, daily dredge and backfill, the Contractor or shall complete daily AD surveys. The Contractor shall present results showing the target dredge depths have been achieved to the CQA and Owner's Representative for approval prior to backfilling to the grades shown on the Construction Drawings. An independent, third-party AD survey will not be completed for Phase II dredging.

As completion of Phase II dredging is verified, the Contractor shall place low-permeability backfill in those areas identified on the Construction Drawings on a daily basis, as specified in the Construction Drawings. Sand backfill in other areas may be placed in the sequence described in the approved Dredging Plan prepared by the Contractor.

During bulkhead support installation, the area under the 3rd Avenue Bridge will be separated from the remainder of the 4th Street Turning Basin by a sheetpile wall. The Contractor may elect to excavate under the 3rd Avenue Bridge in parallel with Phase I or II dredging. However, all Phase I, II, and III dredging and backfilling must be complete before proceeding with capping.

Canal Restrictions

Several bridges between the 4th Street Turning Basin and the entrance to the Canal have restricted horizontal and vertical clearances. The Contractor shall demonstrate that all equipment and materials to be used for the Pilot Study can pass through the bridges. The Contractor is responsible for coordination with the bridge operators and shall keep the Owner's Representative informed of these coordination activities in accordance with Section 01 32 00.

Due to shallow depths in the Canal along the Staging Site, the Contractor shall furnish and install fender piles for temporary mooring of barges at the Staging Site, provide barges with spuds, or

provide alternate anchoring method for approval by the Owner's Representative. Grounding of the dredge, barges, scows, or vessels on the Canal bottom will not be permitted.

Dredge Equipment

The Contractor shall furnish barge-mounted cranes and/or excavators with environmental and conventional clamshell buckets, as described in the Section 35 20 23.13. The environmental clamshell bucket shall be designed to completely enclose the captured dredged sediment and water, and shall be equipped with valves that close when the bucket is withdrawn from the water column.

Dredging will be performed with an environmental bucket unless site conditions necessitate the use of a conventional clamshell bucket according to Section 35 20 23.13. The Owner's Representative shall be provided with the basis, including field demonstration, for recommending use of a conventional clamshell bucket. The design objective is to use the environmental clamshell bucket to the greatest extent practical and to reserve the conventional clamshell bucket for use where debris or other site conditions interfere with the operation of the environmental bucket to a degree that control of sediment resuspension is ineffective or production is greatly affected.

Due to the low headroom and limited workspace under the 3rd Avenue Bridge, the Contractor shall supply equipment suitable for working in tight spaces for Phase III – Dredging of Sediments Beneath the 3rd Avenue Bridge. The Contractor shall submit the proposed means and methods as described in Section 35 20 23.13.

On-Barge Sediment and Debris Handling

As sediment is removed via mechanical dredging, small debris may be commingled with the sediment. All debris greater than 6 inches shall be removed from the sediment. The Contractor shall use grizzly bars to remove debris larger than 6 inches. If spray water is required to wash the material through the grizzly bars or remove oversize debris from the grizzly bars, the water must be from a potable source. All resulting wash water must be collected and sent to the dredge water treatment system.

Environmental Monitoring

Environmental monitoring for air emissions, odor, noise, and water quality will be conducted by others throughout the Work, but the Contractor shall be prepared to implement appropriate controls at the direction of the Owner's Representative in accordance with Sections 01 57 19 and 02 60 16.

2.1.7 Task 7 – Sediment Processing and Dewatering

General

Two methods for solidifying/stabilizing (S/S) dredged material will be evaluated in the Pilot Study: (1) in-barge S/S mixing and (2) transportation to an off-site commercial processing facility for S/S treatment. After S/S treatment, depending on a review of the waste characterization testing of PDM, PDM will either be transported directly to an end-placement facility for beneficial use or transported to a thermal processing facility for thermal treatment prior to beneficial use end-placement. Water resulting from dredging activities will be treated and discharged into the Canal (Section 44 08 40).

Site Staging

The asphalt pad at the Staging Site is shown in the Construction Drawings and will be used for temporary storage of debris to allow for inspection in accordance with the Cultural Resources Monitoring Plan. The Contractor may choose to wash debris on the asphalt pad and/or temporarily stockpile PDM on the asphalt pad prior to transport off-site. The Contractor may also choose to perform decontamination activities on the asphalt pad.

Dewatering

The Contractor shall decant excess water from the dredged material barge and pump it to the Dredge Water Treatment System at the Staging Site for treatment prior to discharging the treated water back into the Canal.

Dredged Sediment In-Barge S/S Mixing

The Contractor shall perform in-barge S/S mixing in accordance with the Construction Drawings and Specifications. The goal of in-barge S/S mixing during the Pilot Study is to evaluate the following: efficiency of mixing, effectiveness of cement additive, improvement of physical properties with varying curing times, and odor and dust release during mixing. The Contractor shall keep records of effectiveness and efficiencies of mixing as described in Section 02 51 19. The Contractor may offload PDM from in-barge S/S mixing to the Staging Site for temporary stockpiling and transport by truck or may transport PDM off-site via barge.

Environmental monitoring for air/odor and noise will be conducted by others during the mixing process. However, the Contractor shall monitor air in the breathing zone during in-barge mixing in accordance with the Contractor's Health and Safety Plan (HASP).

Off-site Dredged Material S/S

Dredged material that is not treated via in-barge S/S mixing shall be transported off-site to a commercial sediment processing facility for S/S in accordance with Section 02 51 19. The Contractor may transport dredged material away from the Staging Site via truck or barge. If the Contractor chooses to transport dredged material via truck from the Staging Site, the Contractor must treat dredged material to pass the Paint Filter Test in accordance with Section 02 51 19. Staging of untreated dredged material is not permitted on the Staging Site. It is the responsibility of the Contractor to ensure that dredged material meets any requirements for transport and acceptance to the commercial processing facility.

2.1.8 Task 8 – PDM End-Placement

End-placement options for PDM will be evaluated as an integral part of the Contractor's Dredged Sediment Management Work Plan. PDM shall be beneficially used following S/S and thermal treatment (if thermal treatment is necessary to meet end-placement acceptance criteria). The Contractor shall be responsible for identifying acceptable facilities to beneficially use PDM and shall provide the information about the proposed facilities as part of the Dredged Sediment Management Work Plan for review by the Owner's Representative.

The Contractor shall be responsible for treating the PDM adequately through S/S alone or S/S followed by thermal treatment such that PDM meets the acceptance criteria of the end-placement facility for beneficial use. Waste characterization sampling shall be the responsibility of the Contractor. The PD-10/21 Treatability Study Report is provided in Attachment K.3. This treatability study includes laboratory analytical testing results for untreated soft and native sediment as well as treated soft and native sediment. The addendum to the report provides a list of potential thermal treatment and end-placement facilities that may accept Gowanus-dredged material. The Contractor may use the PD-10/21 Treatability Study Report as a reference. However, waste profiling and identifying facilities for end placement is the responsibility of the Contractor.

The Contractor shall transport PDM to end-placement facilities in accordance with all applicable laws and regulations.

2.1.9 Task 9 – Water Treatment

Effluent from the dredge water treatment system (DWTS) will be discharged to the Gowanus Canal, provided it meets discharge requirements.

Performance Criteria

The Contractor shall design the water treatment system to meet the following performance criteria:

1. **Sizing Treatment System.** The treatment system shall accommodate the anticipated volume of dredge water and additional inputs generated during dredging activities so as to not adversely impact production.

2. **Dredging Rate.** The treatment system shall be designed to treat the volume of water generated during dredging with built in redundancy as described in Section 44 08 40. The Contractor shall consider local restrictions regarding operational hours during design.

3. **Additional Inputs.** The treatment system shall accommodate stormwater that comes into contact with contaminated sediment on the barge/scow and on the Staging Site. The system shall also accommodate water from equipment decontamination.

4. **Pollutant Discharge Requirements.** The Contractor shall design the treatment system to meet the permit equivalency requirements presented in the Contract Documents. Responsibilities for monitoring by the Contractor and the Owner's Representative are described in Section 44 08 40.

5. **Operational Constraints.** Operational constraints may include restrictions on daily operating times and number of days of operation per week based on local ordinances. Additional operational constraints include scheduled maintenance times. The treatment system shall be designed for a minimum anticipated dredging period of 8 hours per day, Monday through Friday.

6. **Redundancy.** The system will be designed with sufficient redundancy to accommodate system maintenance and unanticipated failure of a single component. Providing redundancy may require extra dredge water equalization storage and backwash water, oversized treatment units, and/or parallel treatment units to allow for repairs/maintenance during operation.

2.1.10 Task 10 – Capping

A multilayered capping system ("cap") will be constructed within the Canal. The purpose of the cap is to provide a layer at the bottom of the Canal that is physically stable and meets remedy performance criteria for contaminants of concern (COCs). COCs listed in the ROD are barium, cadmium, copper, lead, mercury, nickel, PCBs, PAHs, and silver; however, the target COCs for the cap treatment layer (defined below) are PAHs and NAPL.

The cap will consist of three primary layers as follows from the base layer to the surface: (i) an adsorptive treatment layer designed to sequester contaminants; (ii) a sand isolation and filter layer; and (iii) an armor layer. The isolation and filter layer, along with gravel integrated into the armor layer, will also serve as an ecological habitat layer. A structural concrete for underwater applications will be placed between the armor layer and the bulkheads. Prior to capping, a sand leveling layer shall be placed after dredging and backfilling to prepare the surface for capping.

At the western limits of the 4th Street Turning Basin Pilot Study Area and underneath the 3rd Avenue Bridge, as described in the Construction Drawings and Section 35 43 00, sand backfill will be placed in lieu of a multilayered capping system.

The treatment layers are intended to provide long-term physical and chemical isolation of contaminants in underlying native sediment and/or groundwater from surface sediment and overlying surface water. The treatment layer will incorporate active (e.g., activated carbon, oleophilic clay) and passive (e.g., sand) capping materials as described in the Construction Drawings and Section 35 43 00. Two types of treatment layers will be utilized for TB4 with the boundaries shown in the Construction Drawings and formulation detailed in Section 35 43 00.

The armor layer and ecological habitat layer will be placed on top of the treatment layers and will be designed to (i) withstand erosion forces associated with the Flushing Tunnel and vessel navigation and (ii) provide sufficient depth of material to facilitate benthic recolonization. The materials to be used in armoring and ecological habitat layers are described in the Construction Drawings.

The limits of capping are provided on the Construction Drawings. This area is sufficiently large to reach a standard placement rate and allows for quality control tests. The lateral boundaries of capping are assumed to extend from the southern bulkhead or bulkhead support to the northern bulkhead or bulkhead support. At the eastern boundary of the 4th Street Turning Basin Pilot Study Area, the cap will be constructed directly adjacent to the sheet pile driven to separate the 4th Street Turning Basin from activities beneath the 3rd Avenue bridge. The cap will be truncated 25 feet to the east of the western bounds of the area dredged during the Pilot Study.

Final elevations of the cap are presented in the Construction Drawings. Cap installation shall not begin until all dredging and backfilling operations are complete. However, capping shall be conducted as soon as practically feasible after dredging to limit potential recontamination.

Capping materials will be staged near the Canal transported to the placement location, and emplaced in the intended location. Treatment layers shall be mixed to the desired ratio(s). Volume of material delivered will be tracked, and quality control checks of the delivered materials will be conducted during implementation.

Specifications regarding the cap construction and materials are provided in Section 35 43 00.

2.1.11 Task 11 – Waste Management

Management of waste shall be the responsibility of the Contractor. Waste includes debris removed from the Turning Basin, material from selected existing stockpiles on the Staging Site, dredge water treatment system waste such as solid waste and sludges, oil from the oil/water separator, spent treatment media, and other waste generated from day-to-day operations.

Debris removed from the Canal that meets facility acceptance criteria may be recycled. Debris not meeting recycling criteria will be discarded as nonhazardous waste at a permitted Construction and Demolition Debris landfill or Subtitle D landfill, subject to the conditions of the operating permits of the facility. The Contractor shall be responsible for identifying permitted recycling, treatment, and disposal facilities.

Existing stockpiles on the Staging Site must be removed for disposal by the Contractor as indicated in Section 02 51 19. The Contractor shall be responsible for any required waste characterization testing of these existing stockpiles.

Specifications regarding management of waste from the dredge water treatment system and other waste generated from day-today operations are provided in Section 02 51 19.

2.1.12 Task 12 – Cultural Resources Management

Cultural resources refer to archaeological remains located within the Canal that are potentially eligible for the National Register of Historic Places (NRHP) designation. In general, properties (including objects and vessels) that are in excess of 50 years old are eligible for the NRHP.

Training by the on-site Archaeologist will be provided for Contractor staff working on sediment and debris sorting and management. This training will help non-archaeological staff to identify potential cultural resources and understand the protocol in the event any cultural resources are encountered during debris removal activities.

The Contractor may encounter previously unknown potential cultural resources during dredging activities. Should debris be removed that is deemed to potentially be a cultural resource by either the trained Contractor staff or on-site Archaeologist, it shall be placed in a designated portion of the Staging Site. This debris shall be further evaluated for cultural significance by an on-site Archaeologist provided by the Owner's Representative. Debris shall not be discarded until approved by the on-site Archaeologist and the regulatory agencies.

2.1.13 Task 13 – Environmental Management

The Contractor shall implement dust control and sediment and erosion control in accordance with Section 01 57 19 – Temporary Environmental Controls and Section 01 57 13 – Temporary Sediment and Erosion Control.

3. PROJECT AND CONSTRUCTION MANAGEMENT, OVERSIGHT, AND COMMUNICATION

This section describes the management roles and responsibilities of RD Group contractors for the 4th Street Turning Basin Pilot Study. The communication and oversight between the RD Group and EPA is also discussed. The proposed process generally follows EPA Guidance for Oversight of Remedial Designs and Remedial Actions Performed by PRPs (EPA, 1990).

3.1 Definition of Roles

Environmental Protection Agency. The EPA is responsible for oversight of the RD Group-led 4th Street Turning Basin Pilot Study with the goal of ensuring that activities are conducted in compliance with the agreed upon scope of work from the UAO and that the activities are protective of public health and the environment. The EPA Remedial Project Manager (RPM) will have primary oversight and communication with the RD Group Project Coordinator. The RPM receives assistance from a designated in-field Oversight Official (e.g., a representative from EPA's oversight contractor), to serve this function during field activities. EPA is also responsible for communications with the community.

RD Group Construction Management Team. The RD Group is responsible for the successful completion of the proposed Scope of Work. The RD Group project team will be assembled based on their experience and expertise with the specific Scope of Work. Certain project team roles have been defined, but others will be selected during the project bidding after the 100% design is complete and approved by EPA. An overview of the roles and responsibilities of the project team is provided below. The 4th Street Turning Basin Project Organization and lines of communication are shown in the CQA Plan.

3.2 Project and Construction Management Team

Project Administrator. Project Administrator (PA), de maximis, serves as Project Administrator for the overall administration of contracts on behalf of the RD Group (i.e., Owner), and is the Contract Administrator for TB4 Pilot Study. Contract administration services include project performance monitoring; ensuring that work meets performance objectives for cost, schedule, and quality; reviewing Task Order proposals; approving costs; administering subcontractor arrangements; and ensuring compliance with contract requirements.

Construction Manager (CM). Parsons serves as the CM, and in this role is the Owner's Representative in the field. The CM is responsible for the successful management and completion of the in-field construction project, facilitating communication among the general contractor and all other project team members, and coordinating and managing all field activities including the scope, schedule, and budget of all Site activities.

Contractor. The Contractor is responsible for all labor, supervision, materials, and equipment, including subcontractors, necessary to construct the 4th Street Turning Basin Pilot Study. In summary, the Contractor shall build out the staging area, dredge the access channel, install bulkhead supports, manage dredged material (dredging, debris handling, treatment, transport, and disposal), treat dredge water, install the cap, and install associated environmental protections (e.g., silt curtains). All work shall be performed in accordance with the requirements outlined in the Technical Specifications and Construction Drawings.

Engineer of Record (EoR)/Construction Quality Assurance (CQA). As the RD Group's design engineer, Geosyntec serves as the EoR/CQA roles. The EoR is responsible for reviewing submittals critical to the performance of the remedy and documenting design changes that arise during construction. The CQA representative is independent of the Contractor and monitors the Work to document that the Work is being constructed according to design specifications. CQA activities will be conducted by the CQA Consultant in accordance with the CQA Plan.

Noise and Vibration Monitoring. Wilson-Ihriig as the Noise and Vibration Monitoring subcontractor will be responsible for providing the equipment, materials, and labor to collect and manage noise and vibration data from several locations along the Site perimeter in the vicinity of the Work areas. The Noise and Vibration subcontractor shall provide all materials necessary to monitor noise and vibration. Vibration monitoring will be conducted only during bulkhead support installation. Exceedances of noise threshold criteria will be communicated to the CM. The Contractor shall provide all equipment, materials, and labor necessary to implement appropriate operational or noise control measures if an exceedance of the threshold criteria is observed.

Community Air Monitoring Program (CAMP). TRC as the Air Quality Monitoring subcontractor will be responsible for providing the equipment, materials, and labor to collect and manage air quality and odor data. Exceedances of threshold criteria will be communicated to the CM. The Air Quality Monitoring subcontractor shall provide all materials necessary to monitor air quality and odors in accordance with the CAMP. The Contractor shall provide all equipment, materials, and labor necessary to implement appropriate air quality and odor control measures if an exceedance of the threshold criteria is observed. The Contractor shall furnish odor suppressant foam in accordance with Section 01 57 19.

Water Quality Monitoring – Water quality in the 4th Street Turning Basin and main portion of the Canal will be monitored by Geosyntec. Water quality monitoring will be conducted prior to and during in-water operations. Monitoring results will be communicated on a daily basis to the CM. The Contractor will provide equipment, materials, and labor necessary to implement appropriate operational or water quality control measures if an exceedance of the threshold criteria is observed.

Archeology/Cultural Resources – AHRS will provide cultural resource management guidance and consulting services. AHRS has been involved in the development of the EPA approved Cultural Resources Mitigation and Treatment Plan and Cultural Resources Monitoring Plan. AHRS also conducted the cultural resources on the 4th Street Turning Basin Debris Removal Pilot Study.

Hydrographic Surveying – SeaVision will perform independent surveys to calculate dredge volume for final payment and approve dredge clearance. These surveys are in addition to those performed by the Contractor as required by the Specifications.

3.3 RD Group and EPA Communications

During the implementation of the 4th Street Turning Basin Pilot Study, questions will need to be answered and adaptations will occur. Proper project communications are critical to a successful project and the goal is for EPA and the RD Group to effectively and efficiently communicate. To effectively communicate, the EPA and the Oversight Official will direct all field inquires and questions to the on-site CM. The CM will gather the answer from either their knowledge of the project or in communication with the project team members. Further discussion of the issues and all discussions of project modifications will be conducted between EPA and the RD Group Project Coordinator (Howard Cumberland, Geosyntec). The Project Coordinator has a direct reporting line to the RD Group to efficiently discuss the issues with the RD Group and EPA and reach resolution. The proposed communications plan is shown in the CQA Plan.

4. REFERENCES

Environmental Protection Agency (EPA), 990. *EPA Oversight of Remedial Designs and Remedial Actions Performed by PRPs*. USEPA Office of Emergency and Remedial Response. Publication 9355.5-01/FS. February 1990.

Environmental Protection Agency (EPA), 2014. *"Unilateral Administrative Order for Remedial Design, CERCLA-02-2014-2019."*

US Army Corps of Engineers (USACE), 2013. *"Hydrographic Surveying Engineering Manual."* EM 1110-2-1003.

[END OF SECTION]